Section 9 - External Interfaces

This section describes the External Interface PCB and the connectors on the rear panel of the Workstation. It is organized as follows:

References

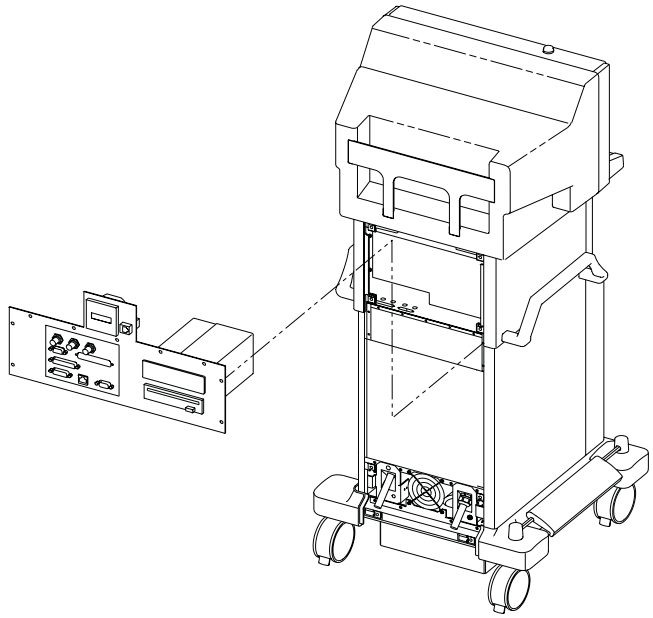
Refer to **Workstation Interconnect Diagram 00-878981** and **External Interface PCB Schematic 00-879184** while reading the following paragraphs.

External Interface PCB

The External Interface PCB provides a way to connect the Workstation to external equipment.

Location

The External Interface PCB is located at the rear of the Workstation as shown next.



External Interface PCB Location

Circuit Description

The primary purpose of the External Interface PCB is to provide a junction point between the Workstation and external equipment such as the ARCNET, Power Injector, **X-Ray On** and **Room in Use** lamps, and switch closure inputs from such devices as a Door Interlock switch. Most of the signals that travel through the PCB do not interface with components on the PCB itself. There are a few exceptions:

- Relay K1 removes the ARCNET termination resistor R1 from the circuit when you connect an external ARCNET device to P4. The Workstation ARCNET circuit has the necessary termination resistance and can be connected to an external ARCNET, laptop, or other ARCNET compatible communications device when there are no node address conflicts on the peripheral devices. K1 is controlled by software from the System Interface PCB.
- Relay K2 provides a software-controllable switch closure to drive an external Power Injector unit.
- Relay K3 provides a software-controllable switch closure to drive and external **X-Ray On** lamp.
- Relay K4 provides a software controllable switch closure to drive an external **Room in Use** lamp.

Test Points

Use TP1 and TP3 to check for +5 VDC across C1 and C4. Use TP2 and TP4 to check for +12 VDC across C2 and C3.

Circuit Breakers and Fuses

There are no circuit breakers or fuses on the External Interface PCB..

Troubleshooting

The External Interface PCB is a simple device consisting mostly of passive components. Its primary function is to conduct signals from various external sources to the appropriate input on the System Interface PCB. There are also four relays on the board. K2, K3 and K4 close switches that may be used to operate external equipment. K1 terminates the ARCNet or connects it to external devices.

When troubleshooting this card, look for a broken connector or physical damage to a trace. The chances of a relay failing shorted are unlikely. The contracts are rated for 2 amps.

Removal and Replacement

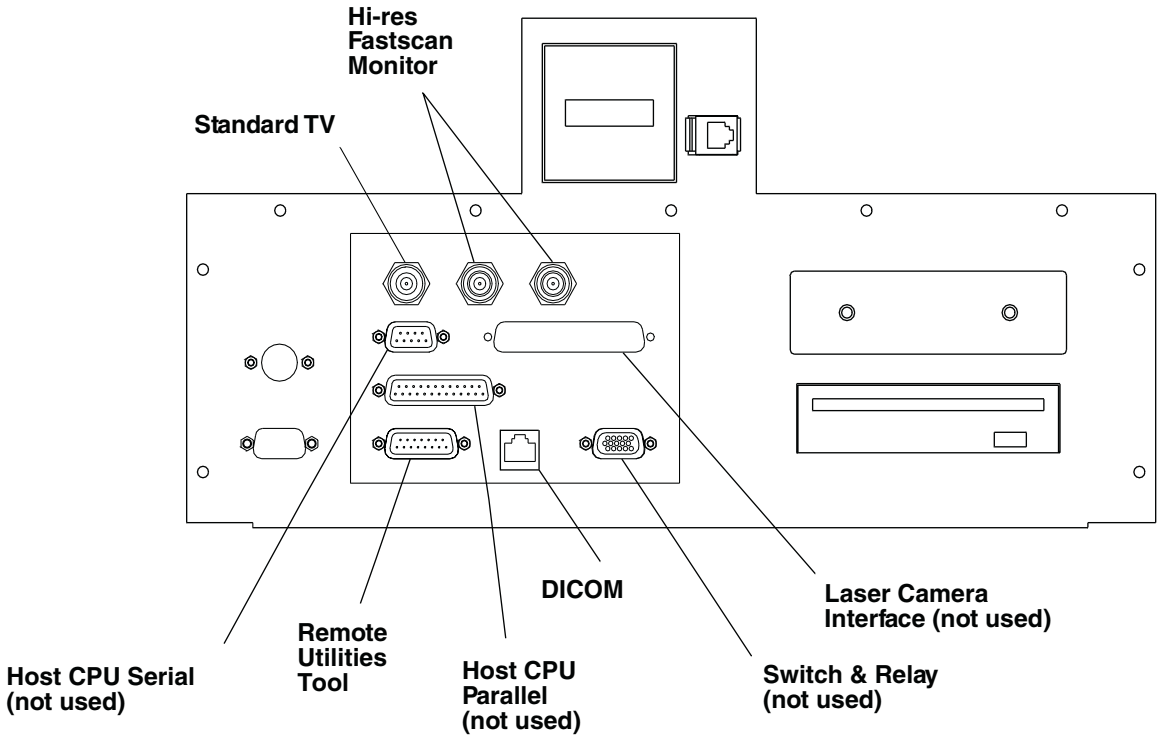
Follow these steps to replace the External Interface PCB:

1. Remove power from Workstation.
2. Remove **Workstation's Rear Cover**.
3. Use Torx screwdriver to remove nine 6-32x3/8 pan head Torx screws that attach External Interface Panel to Electronics Box.
4. Pull out External Interface Panel.
5. Remove cables A3J1, A3J2 and the Ethernet cable that attach to External Interface PCB.
6. Use 3/16" nutdriver to remove the four Jacking screws that hold External Interface PCB to External Interface Panel.

Perform above steps in reverse order to install new External Interface PCB.

External Interface Panel Connectors

The following paragraphs describe individual connectors on the External Interface Panel



External Interface Panel

External RS170/CCIR

This is a BNC connector that you can use for an external video monitor or VCR. Depending on system configuration it supports 60 Hz (RS170) or 50 Hz (PAL) video. The **Display Adapter PCB** (00-881447) provides the video for this connector.

Left/Right High Resolution Monitors

These BNC connectors support additional high-resolution monitors. The **Display Adapter PCB** also provides video to these connectors.

RS-232 Serial Communication

This 9-pin D-type connector is not used.

Laser Camera Interface

This port is not presently used. Laser Camera/Direct Digital Printer output is being accommodated via the Dicom output.

Parallel Printer Port

This 25-pin D-type port is not used.

ARCNET Connector

This 15-pin D-type connector is used by Field Service Engineers to connect a Laptop computer to the Workstation in order to use the Remote Utilities Tool (RUT). The following Table is a detailed pin-out of this connector:

ARCNET Connector

Mnemonic	Pin Number	Description
ARCNET_HI_2	1	One of two differential ARCNET 2 signal lines
ARCNET_LO_2	2	One of two differential ARCNET 2 signal lines
SPARE	3	NC
FRAME_SYNC_HI_2	4	One of two differential Frame Sync 2 signal lines (driven)
FRAME_SYNC_LO_2	5	One of two differential Frame Sync 2 signal lines (driven)
DIAG_TXD	6	Transfer Data (Remote Diagnostics)
DIAG_RXD	7	Receive Data (Remote Diagnostics)
GND	8	Ground
CONFIG0	9	Bi-plane/peripheral configuration bit 0 (Input)
CONFIG1	10	Bi-plane/peripheral configuration bit 1 (Input)
CONFIG2	11	Bi-plane/peripheral configuration bit 2 (Input)
CONFIG3	12	Bi-plane/peripheral configuration bit 3 (Input)
+5V (ARCNET_BIAS_PWR)	13	+5V Supply from Sys. Int. PCB for ARCNET Term. Bus
FRAME_SYNC_LO_SLAVE	14	Frame Sync from other 9800 System for Bi-plane Mode
FRAME_SYNC_HI_SLAVE	15	Frame Sync from other 9800 System for Bi-plane Mode

DICOM 3.0 Interface

The port labeled **Ethernet** connects the Workstation to a facility network, typically for image transmission. All network hardware and software is customer furnished.

Switch and Relay Control

This 15-pin D-type connector provides relay closure outputs for such things as **X-ray ON** and **Room in Use** lights, and Power Injector operation. Relays on the External Interface PCB.

The following is a detailed pin-out of this connector:

Switch and Relay Control

Mnemonic	Pin Number	Description
PWR_INJCT_1	1	Power Inject relay switch contact
XRAY_ON_1	2	X-ray On Lamp relay switch contact
RM_IN_ISE_1	3	Room In Use relay switch contact
DR_INT_SW	4	Door Interlock switch line 1
DR_INT_SW_RTN	5	Door Interlock switch line 2
PWR_INJCT_2	6	Power Inject relay switch contact
XRAY_ON_2	7	X-ray On Lamp relay switch contact
RM_IN_USE_2	8	Room In Use relay switch contact
START_SW	9	Start switch line 1
START_SW_RTN	10	Start switch line 2
SPARE CONDUCTOR	11	No Connect
SPARE CONDUCTOR	12	No Connect
SPARE CONDUCTOR	13	No Connect
SPARE_SW	14	Spare switch line
SPARE_SW_RTN	15	Spare switch line